



MOBILE PHONE COMPANION APPARATUS TO PROVIDE VOICE LINK WITH LAND-LINE HOUSE TELEPHONE

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Cross-Reference

US PATENT DOCUMENTS

4,658,096 4/14/1987 West et al.

5,715,296 2/3/1998 Schornack et al.

5,946,616 8/31/1999 Schornack et al.

Statement Regarding Federally Sponsored Research or Development

The claimed invention is not sponsored by federal research and development grant.

BACKGROUND AND PRIOR ART

Description of the Prior Art

Existing products, such as Phonecell SX4e FWT for GSM 1900 and Phonecell SX4D Desktop phone for TDMA 800 manufactured by TELULAR Corp. and described in U.S. Pat. No. 5,946,616 issued on Aug. 31, 1999 and U.S. Pat. No. 5,715,296 issued on Feb. 3, 1998, focus on decoupling RF circuit loop and land-line circuit loop on a fixed wireless telephone set.

US Pat. No. 4,658,096 issued to West et al. on April 4, 1987 details an interface system for interfacing a telephone set with a RF transceiver as part of telephone network.

The fixed wireless telephone set requires build-in RF function in order to receive and transmit RF signal to communicate with mobile phone service provider's station. Therefore, the fixed wireless hardware requires frequent upgrade for mobile service providers' frequency band changes and wide range of fixed wireless telephone models are needed to work with wireless service providers' many mobile network systems, e.g., GSM, TDMA, and CDMA.

AC to 24.74V AC, as the 2nd peak voltage. The 2nd peak voltage then passes through the full wave bridge rectifier **2-5**, results in an output voltage of 14.86V AC. Capacitor filter **7** acts as ripple remover with capacitance ranging from several hundreds to thousand uF. Resistance **6** is the current limiting resistor for surge current reduction. An 11V Zener diode **8** is attached before the power supply output end to ensure stable DC voltage output **VD**, as shown in **Fig. 2B**.

8V Voltage Driver; Fig. 3B

Function of this module is to supply DC voltage needed to drive the speech circuit of the land-line telephone handset circuit. The power driver is composed of a Zener diode **11** and one capacitor **12**, see **Fig. 3B**. Zener diode **11** of this circuit acts as an 8V voltage regulator and capacitor **12** is to remove any residual AC noise. An external On/Off switch **9** is provided to turn on or off the voltage driver unit.

11V Voltage Driver; Fig. 3C

Function of this module is to supply DC voltage needed to drive the ringer of land-line telephone handset circuit. Also, it acts as the power supply for two key modules in the **PMC** box, they are the Impedance Variation Detector (**IVD**) and the Ring Tone Generator (**RTG**). The driver is composed of one Zener diode **14** and one capacitor **15**, see **Fig. 3C**. Zener diode acts as voltage stabilizer and capacitor **15** is to remove any residual AC noise. On/Off switch **13** is an external switching unit to turn on or off the voltage driver unit.

Ring Tone Generator; Fig. 3D

The function of the **RTG** is to provide repeating ring tone AC signal to trigger the land-line telephone ringer to inform the receiving party of incoming calls through mobile phone, while voice AC is fed into wall jack. Signal of ring tone is a repeating of 6 seconds cycle, 2 seconds are high voltage at 12V AC **17** and 4 seconds are +0 Volt or low voltage AC **16**. Upon receiving the first cycle of ringer signal from mobile phone headphone outlet, the **PMC** unit will continue to provide the Tone Signal Cycles, as shown in **Fig. 3D**, to land-line telephone through line **A*** until the receiving party answers the phone. To provide the correct cadence from the **PMC** box, the **RTG** module is composed of six shift registers **34-39**, five relays **23-27**, six amplifiers **28-33**, and